

Occupational allergy to fern

A. Rodríguez*, M. De Barrio, C. De Frutos,
V. de Benito, M. L. Baeza

Key words: fern; immunoblotting; occupational;
Polypodium vulgare; spores.

● **ALTHOUGH** fern allergy is common in some countries, it is rare in Spain, where, so far, fern antigens have not been recognized as occupational allergens.

An 18-year-old man was diagnosed with mild rhinoconjunctivitis and asthma to pollen, mites, and cat dander. Several months later, he began to work at a fishmonger's, when he noted worsening of his rhinoconjunctivitis. He also developed local pruritus and wheals after handling the fern fronds (*Polypodium vulgare*) used to decorate boxes of fish.

The patient rarely suffered nasoconjunctival symptoms when not at his workplace. Symptoms did not worsen on contact with any fish, and he ate them without problems. Rhinoconjunctivitis and contact urticarial symptoms totally disappeared when the ferns were removed from his workplace.

Prick by prick test with the fern was positive (5×8 mm wheal). Seven control subjects were negative.

Extract of fern frond was prepared in our laboratory and for *in vitro* studies. Specific IgE to fern was detected by ELISA in the patient (optical density [OD]: 0.656), and it was negative in a control subject (OD: 0.096). SDS-PAGE followed by immunoblotting revealed specific IgE antibodies in the patient's serum against 12- and 35-kDa antigenic bands.

Fern spores, which are released under optimal conditions of humidity and

temperature (1), probably cause allergic reactions as aeroallergens as well as contact sensitizers. Our patient developed both types of reactions. Fern spores are important environmental allergens in tropical countries, where they may be the third-most common aeroallergen (e.g., Thailand and the Philippines) (2). The incidence of sensitization to fern spores (prick test with self-made fern extract) in Asian countries is close to 65% among patients with asthma and/or rhinitis, and 25% among nonatopic subjects (3). Bunnag et al., performing nasal provocation tests in fern-sensitized patients with fern-spore extract, found positive results in 70% of the patients (2). Geller-Bernstein et al. (4) found that 50% of fern-sensitized, atopic subjects had had an ornamental fern at home for 3–5 years.

Kofler et al. (1) present a patient who reported rhinitis due to a different fern genus (*Nephrolepis* sp.). Immunoblotting analysis revealed specific IgE antibodies to 40- and 35-kDa proteins. The 35-kDa protein may be a common allergen among fern species, because our patient's serum IgE recognized a protein with the same molecular mass as in *P. vulgare*.

We describe the first known case of occupational rhinoconjunctivitis and contact urticaria caused by an ornamental fern.

*C/ Meléndez Valdés, 22-5°A
28015 Madrid
Spain
Tel. 91 593 87 99/667 41 43 44
Fax: 983 33 04 09
E-mail: angelrop@hotmail.com

Accepted for publication 7 September 2000
Allergy 2001; 56:89
Copyright © Munksgaard 2001
ISSN 0105-4538

References

1. KOFLE H, HEMMER W, FOCKE M, JARISCH R. Fern allergy. *Allergy* 2000;**55**:299–300.

2. BUNNAG C, DHORRANINTRA B, LIMSUVAN S, JAREONCHARSRI P. Ferns and their allergenic importance: skin and nasal provocation tests to fern spore extract in allergic and non-allergic patients. *Ann Allergy* 1989;**62**:554–558.
3. CHEW FT, LIM SH, SHANG HS, et al. Evaluation of the allergenicity of tropical pollen and airborne spores in Singapore. *Allergy* 2000;**55**:340–347.
4. GELLER-BERNSTEIN C, KEYNAN N, BEJERANO A, SHOMER-ILAN S, WAISEL Y. Positive skin tests to fern spore extracts in atopic patients. *Ann Allergy* 1987;**58**:125–127.

Immunotherapy despite anaphylaxis-induced myocardial infarction

O. Quercia, F. G. Foschi*, L. Marsigli, S. Rafanelli,
G. F. Stefanini

Key words: anaphylactic reaction; Hymenoptera venom allergy; myocardial infarction; systemic immunotherapy.

● **ALLERGEN**-specific systemic immunotherapy (SIT) is considered one of the therapeutic approaches able to reduce symptoms in allergic patients. Moreover, in Hymenoptera venom allergy, SIT is the only therapy that offers protection from life-threatening reactions. During SIT, serious side-effects, i.e.,

either local (pain, erythema, or edema) or generalized reactions

SIT is recommended even in this severe Hymenoptera sting reaction.

(urticaria, angioedema, asthma, and anaphylaxis) may occur (1). The systemic side-effects of SIT are the most important argument against this therapeutic strategy. Although the risk of severe anaphylactic reactions is low (but not negligible), the development and use of more powerful allergen extracts increases the risk of side-effects. In fact, adverse generalized reactions

due to SIT are more common with Hymenoptera venom than with other extracts (12% and 2.1%, respectively) (1, 2). On the other hand, it is well known that treatment is effective only with allergen extracts with consistent potency and composition (3, 4).

Anaphylactic reactions are characterized by activation of mast cells and release of previously synthesized mediators stored in granules, as well as by production of new mediators that can induce a systemic involvement with different conditions such as bronchospasm, hypotension, and shock; myocardial or cerebral infarction may ensue. Therefore, since SIT can provoke systemic reactions, it would seem to be unwise to administer it to allergic patients with cardiovascular diseases.

We would like to highlight two cases of myocardial infarction (MI) that followed a Mueller degree 4 reaction to Hymenoptera sting. Skin prick tests and specific IgE evaluation were performed after MI and led to the diagnosis of allergy to Hymenoptera venom. An ECG performed a few months before MI was normal in both patients.

Case 1 was that of a 44-year-old white male farmer admitted to our hospital for anaphylaxis after a Hymenoptera (*Apis mellifera*) sting. He was treated with epinephrine and steroids. About 20 min after the Hymenoptera sting, abdominal pain and vomiting appeared. The ECG

showed ischemic myocardial injury in the lateral leads, and laboratory tests revealed increased myocardial enzymes and leukocytosis.

Case 2 was that of a 55-year-old white male bricklayer who complained of sudden angioedema after a Hymenoptera sting (*Vespa crabro*). The patient was admitted to the emergency room and treated with antihistamines and steroids. Ninety minutes after the Hymenoptera sting, precordial and left arm pain ensued. An ECG showed a subepicardial lesion in leads D3 and aVF. Increased myocardial enzymes confirmed the presence of myocardial necrosis. Both patients underwent rush Hymenoptera venom SIT according to European Academy of Allergology and Clinical Immunology (EAACI) guidelines (5), without reporting side-effects. They subsequently followed a maintenance regimen (for 8 and 2 years, respectively).

It is noteworthy that both patients received a spontaneous challenge without developing systemic reactions or heart disorders. Considering the high degree of exposure of both patients, we suggested SIT despite the high specific risk of myocardial infarction from systemic reaction.

We support SIT for allergy to Hymenoptera venom even if patients are at risk of a complication such as MI provoked by allergic reaction, because of the high probability of spontaneous challenge and

therefore serious risk of anaphylactic reaction, which is higher than the risk posed by SIT.

*Divisione di Medicina Interna
Ospedale di Faenza
Via dello Stradone
Faenza (RA)
Italy
Tel. +39 0546 673348
Fax: +39 0546 664352
E-mail: fgfoschi@tin.it.

Accepted for publication 22 August 2000
Allergy 2001; 55:89–90
Copyright © Munksgaard 2001
ISSN 0105-4538

References

1. ROGALA B. Risk and safety of immunotherapy. *Allergy* 1998;**53**:473–476.
2. LOCKEY RF, TURKELTAUB PC, OLIVE ES, HUBBARD JM, BAIRD-WARREN IA, BUKANTZ SC. The Hymenoptera venom study. III. Safety of venom immunotherapy. *J Allergy Clin Immunol* 1990;**86**:775.
3. LOCKEY RF, BENEDICT LM, TURKELTAUB PC, BUKANTZ SC. Fatalities from immunotherapy and skin testing. *J Allergy Clin Immunol* 1987;**79**:660–677.
4. JOHNSTONE D, DUTTON A. The value of hyposensitization therapy for bronchial asthma in children: a 14 year study. *Pediatrics* 1968;**42**:793–799.
5. MÜLLER U, MOSBECH H. Position paper. Immunotherapy with Hymenoptera venoms. *Allergy* 1993;**48 Suppl 14**:37–46.